Catalog values of carbide material

Depending on the use environment and preservation condition, carbide material can corrode, resulting in strength reduction.Cobalt (Co) melts out in acidic or neutral liquid. And the main component tungsten carbide (WC) melts out in alkaline liquid.

Though carbide corrodes slowly in the air, please select fresh tools to bring out the best performance.

Type : A

JIS Classification	Co(%)	Hardness	Bending Strength
K10	6	92.4	3400
Z20	12	92.5	4400

Type : B

JIS Classification	Co(%)	Hardness	Bending Strength
K20	10	91.9	4000
Z20	9	91.3	3500

Type : C

JIS Classification	Co(%)	Hardness	Bending Strength
K10	—	92.0	2600
Z20	—	91.2	3200

※The cobalt content is not disclosed.

※Carbide corroded by coating removal.

Recommended machining conditions for carbide tools

Dry processing (coating is necessary)

Work Material	Cutting Speed	1 Blade Feed Amount
Around HRC35	100～350	0.01～0.1
Around HRC45	50～150	0.01～0.05
Around HRC55	40～100	0.01～0.025

Wet processing (coating recommended as necessary)

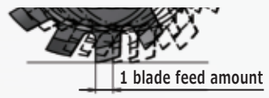
Work Material	Cutting Speed	1 Blade Feed Amount
Around HRC35	80～250	0.01～0.1
Around HRC45	50～150	0.01～0.05
Around HRC55	40～100	0.01～0.025

$$\text{Cutting Speed (m/min)} = \frac{\text{Tool outside diameter} \times \text{Pi} \times \text{Rotation number of main shaft}}{1000}$$

$$201\text{m/min} = \frac{\phi 32 \times 3.14 \times 2000\text{rpm}}{1000}$$

$$\text{1 blade feed amount (mm/tooth)} = \frac{\text{Tool feed amount per rotation of main shaft}}{\text{the number of tool blades}}$$

$$0.1\text{mm/tooth} = \frac{1.2\text{mm}}{12 \text{ blades}}$$



$$\text{Tool feed amount per rotation of main shaft (mm/rev)} = \text{the number of tool blades} \times \text{1 blade feed amount}$$

$$1.2\text{mm/rev} = 12 \text{ blades}$$

The recommended processing conditions are based on approximate data.In actual processing please adjust according to the shape of workpiece and the machine used.

The processing conditions and processing accuracy vary greatly depends on the work piece material, the machine rigidity and the maintenance status of work piece.
Particularly depending on the shape and the maintenance status of workpiece to a large extent, if the workpiece has a small diameter or a short distance between the tooth base and the inner diameter, it may be impossible to achieve high-precision machining even within the recommended range of processing conditions.